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1. Title of the Invention

ALARM DEVICE

2. Claims

(1) An alarm device that includes an open/close detection means provided at each location of a house for detecting opening/closing of a window or a door and issues an alarm on the basis of a detection signal sent from the open/close detection means comprising:

a mode switching means for switching the alarm device to an unmanned guard mode; and

when the alarm device is switched to the unmanned guard mode by the mode switching means, until a first predetermined time has passed since closing of a predetermined gateway is detected by the open/close detection means corresponding to the gateway, a stopping means for stopping an alarm based on a detection signal sent from the open/close detection means.

(2) An alarm device as stated in Claim 1 further comprising a disabling means for disabling the stopping means when the alarm device is switched to the unmanned guard mode by the mode switching means, if opening of the predetermined gateway is detected by the open/close detection means corresponding to the gateway and then closing of the predetermined gateway is

not detected by the open/close detection means until a second predetermined time has passed.

(3) An alarm device as stated in Claim 2, wherein the second predetermined time is sufficiently longer than the first predetermined time.

According to the present invention, in summary, when the alarm device is switched to an unmanned guard mode by a mode switching means, until a first predetermined time has passed since closing of a predetermined gateway is detected by the open/close detection means corresponding to the gateway, an alarm based on a detection signal sent from the open/close detection means is stopped.

Fig. 1 is a schematic view of an alarm system in accordance with an embodiment of the present invention. In this figure, at various positions in a house 1 are provided with a fire sender 2, a intrusion sender 3, a glass sender 4 and a gas sender 5, each of the senders detects fire, abnormal intrusion, breakage of glass and leakage of gas, respectively. On detection of abnormality, each of the senders sends an abnormality detection signal to a controller 7. An emergency button 6 is kept at a resident's hand at all times. When detecting abnormality, the resident operates the emergency button 6 to sends the abnormality detection signal to the controller 7. Based on the detection signal sent from any of the senders 2 to 5 and the emergency button 6, the controller 7 generates an alarm. For example, a drive signal is delivered to a dialer 8. The dialer 8 is directly connected to a phone line and stores a dial number of a security center that is previously asked for security. That is, on

receipt of the drive signal from the controller 7, the dialer 8 informs the abnormality to the security center 9. The controller 7 is equipped with a power source for driving via an electric light wire 10. When determining the abnormality, the controller 7 sends the drive signal to a buzzer box 11 via the electric light wire 10 as well as sends a drive signal to the switch box 12. Such signal transfer using the electric light wire is well known in the field of interphones, for example. The switch box 12 serves to turn on a light 13 provided outside of the house 1. When the abnormality occurs, if the light 13 provided outside of the house 1 is lighted, the abnormality can be easily found from the outside. A security guard of the security center 9 has a patrol button 14 on his person. That is, the abnormality is informed to the security center 9, the security guard rushes to the house 1 that informs the abnormality and operates the patrol button 14 to stop driving of the switch box 12.

Fig. 2 is a schematic block diagram of the intrusion sender 3 in Fig. 1. In this configuration, the intrusion sender 3 includes a control circuit 301. The control circuit 301 is driven by a battery 302 built in the control circuit 301. In connection with the control circuit 301, an open/close detection switch 303 is provided. The open/close detection switch 303 is a switch for detecting opening or closing of a window or a door. Furthermore, in connection with the control circuit 301, a partial release switch 304 as an example of a detection function release means is provided. The partial release switch 304 is a switch for releasing the open/close detection function of the control circuit 301. Furthermore, in connection with the control circuit 301, a sender 305, a unit code setting unit 306, a depleted battery alarm buzzer 307, a house code setting unit 308 and a voltage detection circuit 309 are provided.

When receiving a signal to be sent from the control circuit 301, the sender 305 modulates the signal at 4.1 kHz and further at 322MHz and sends

the modulated signal to the controller 7. The signal to be sent includes open and close signals sent from the open/close detection switch 303, a partial release signal sent from the partial release switch 304 and a depleted battery signal sent from the voltage detection circuit 309. The unit code setting unit 306 previously sets unit codes unique to each sender and when a detection signal is sent to the controller 7, the unit code is read into the control circuit 301 and sent to the controller 7 together with the detection signal. Accordingly, the controller 7 can find which sender sends the detection signal. The house code 308 previously sets a house code unique to the house 1 and when the detection signal is sent to the controller 7, the house code is read into the control circuit 301 and sent to the controller 7 together with the detection signal. This is performed to prevent interference between adjacent houses. The voltage detection circuit 309 monitors output voltage of the battery 302 at all times and sounds the buzzer 307 when the output voltage lowers to a predetermined value or lower to inform depleted battery.

Fig. 3 is a view showing outline of the controller 7 in Fig. 1. The controller 7 is provided with a power lamp 15. The controller 7 is further provided with an abnormal display lamp 20 for displaying the type of abnormality. The abnormal display lamp 20 includes a fire lamp 16 for displaying fire, an intrusion lamp 17 for displaying abnormal intrusion, an emergency lamp 18 for displaying other abnormality and a battery lamp 19 for displaying depletion of the battery. The controller 7 is further provided with a location display lamp 21 corresponding to the intrusion sender 3 installed at a place in the house 1. The controller 7 is further provided with an in-home button 22 for switching to an in-home mode, a night button 23 for switching to a night mode, an out-of-home button 24 for switching to an out-of-home mode, an overnight button 25 for switching to an overnight mode and a test button 26 for

switching to a test mode. As described in detail later, the in-home mode is a mode set when the resident is at home 1 and in the mode, guard against abnormal intrusion is released. The night mode 23 is a mode set in bedtime. The out-of-home mode is a mode set, for example, when the resident works near the house 1 (trim a garden, hang out washing, etc.). The overnight mode is a mode set, for example, when the resident goes shopping or stays out overnight. The test mode is a mode set to test whether or not the alarm system operates normally. The controller 7 is further provided with a mode lamps 27 corresponding to the mode button 22 to 26. The controller 7 is further provided with a speaker 28 for issuing an alarm. The controller 7 is further provided with a digital clock 29 and the like as necessary.

Fig. 4 is a schematic block diagram of the controller 7. In this configuration, a clock pulse is given to a CPU 30 from a clock pulse generator 31. That is, the CPU 30 controls its operation according to the clock pulse. In connection with the CPU 30, a ROM 32, a RAM 33 and an I/O interface 34 are provided. The ROM 32 stores operation programs shown in Fig. 8 to Fig. 11 therein. The RAM 33 includes a storage area shown in Fig. 5. The I/O interface 34 is connected to the abnormal display lamp 20, the location display lamp 21, the mode display lamps 27, the mode buttons 22 to 26 and the dialer 8. Furthermore, an antenna 38 is connected to the I/O interface 34 through a superregenerative wave detector 37, a 4.1 kHz wave detector 36 and an amplifier 35. That is, a radio wave sent from each of the senders 2 to 6 is received by the antenna 38 and detected by the superregenerative wave detector 37. An output of the superregenerative wave detector 37 is further detected by the 4.1 kHz wave detector 36. The reason why the received radio wave is detected twice in this manner is that when sending a detection signal, each of the senders 2 to 6 modulates the detection signal at 4.1 kHz once and

further at 332 MHz. Since a weak radio wave is used in such alarm system, the superregenerative wave detector 37 is used to improve receiving sensitivity. The I/O interface 34 is further connected to the electric light wire 10 through a modulator 39, the amplifier 40 and a capacitor 41. That is, the CPU 30 determines abnormality on the basis of the abnormality detection signal, a predetermined signal is given to a modulator 39 through the I/O interface 34. This signal is modulated by the modulator 39 and given to the buzzer box 11 and the switch box 12 through the electric light wire 10 as a drive signal. The electric light wire 10 is given to a voltage stabilization circuit 42. Stabilized voltage output from the voltage stabilization circuit 42 is used as drive voltage of the controller 7. The I/O interface 34 is connected to the speaker 28 through a buzzer circuit 43.

Fig. 5 is a schematic view showing the storage area of the RAM 33 in Fig. 4. The RAM 33 includes a storage area 331 used as a night delay timer (hereinafter referred to as a night delay timer), a storage area 332 used as an intrusion alarm timer (hereinafter referred to as an intrusion alarm time), a storage area 333 used as an entrance delay timer (hereinafter referred to as an entrance delay timer), a storage area 334 used as an entrance delay alarm timer (hereinafter referred to as an entrance delay alarm timer), a storage area 335 used as a gateway delay timer (hereinafter referred to as a gateway delay timer) and a storage area 336 used as an entrance guard flag (hereinafter referred to as an entrance guard flag).

The night delay timer 331 is set to run out for, for example, 30 seconds. The night delay timer 331 delays issuance of the alarm for 30 seconds (for example, report to the security center 9) when the window or the door is opened in the night mode. That is, the night delay timer 331 is switched to the in-home mode or the function of the intrusion sender that detects opening is released

before the night delay timer 331 is set to run out, the opening is not treated as abnormal intrusion. The intrusion alarm timer 332 is set to run out for, for example, 5 minutes. This intrusion alarm timer 332 is a timer for stopping an alarm caused by abnormal intrusion in the out-of-home or overnight mode after a lapse of 5 minutes. This contributes to prevent nuisance to the neighbors by the alarm. The entrance delay timer 333 is set to run out for, for example, 30 seconds. The entrance delay timer 333 is a timer for releasing intrusion alarm attitude for the entrance for 30 seconds after the entrance door is closed when 335 the resident switches to the out-of-home or overnight mode and goes out. This serves to address the case where the entrance is reopened for something left behind or the other reasons. The entrance delay alarm timer 334 is set to run out for, for example, 45 seconds. The entrance delay alarm timer 334 is a timer for delaying issuance of an alarm for 30 seconds when the entrance door is opened in the out-of-home or overnight mode. That is, if intrusion alarm attitude is not released within 45 seconds, the opening is treated as abnormal intrusion. The gateway delay timer 335 is set to run out for, for example, 5 minutes. When the resident switches to the out-of-home or overnight mode and goes out, the gateway delay timer 335 is set by opening the entrance door and reset by closing the entrance door. When the gateway delay timer 335 runs out, abnormality is informed to the security center 9 through the dialer 8. That is, the gateway delay timer 335 is a timer for preventing crime caused by forgetting to shut a lock.

Fig. 6 and Fig. 7 are time charts for describing operations especially relating to the present invention in the embodiment shown in Fig. 1 to Fig. 5. Hereinafter, with reference to Fig. 6 and Fig. 7, operations in the embodiment shown in Fig. 1 to Fig. 5 will be schematically described.

First, with reference to Fig. 6, operations when leaving home will be

described. In this case, the out-of-home button 24 (or the overnight button 25) of the controller 7 is pressed and the out-of-home mode lamp (or the overnight mode lamp) is turned on. The controller 7 takes intrusion alarm attitude against the window and the door. However, intrusion alarm attitude against the final gateway (for example, the entrance door) is not taken. Next, to leave the house, the final gateway is opened and closed and the entrance delay timer 333 shown in Fig.5 is set. After a lapse of 30 seconds from the time when the entrance delay timer 335 runs out, intrusion alarm attitude against the final gateway is taken for the first time. Even when the resident forgets to close a door of the final gateway when leaving the house, the gateway delay timer 335 shown in Fig. 5 is set in concurrence with closing of the door of the final gateway and after 5 minutes, intrusion alarm attitude against the final gateway is taken.

Next, operations in coming home will be described with reference to Fig. 7. In this case, the moment the final gateway is opened, the entrance delay alarm timer 334 shown in Fig. 5 is set and an alarm is issued with small volume. This alarm serves to prompt pressing of the in-home button 22 in the controller 7. If the in-home button 22 is pressed before the entrance delay alarm timer 334 runs out, the intrusion guard attitude is released and the alarm is stopped. However, unless the in-home button is pressed within 45 seconds when the entrance delay alarm timer 334 runs out, an intrusion signal is sent to the dialer 8 as abnormal intrusion and an alarm is issued with large volume.

Fig. 8 to Fig. 11 are flowcharts showing operations relating to the CPU 30 shown in Fig. 4. Fig. 8 shows a main flow and generally, operations in the main flow are performed. Fig. 9 is a flowchart showing a timer processing operation at a step 2 in the main flow of Fig. 8. Fig. 10 is a flowchart showing a night intrusion processing operation at a step 17 in the main flow of Fig. 8.

Fig. 11 is a flowchart showing an out-of-home and overnight intrusion processing operation at a step 33 in the main flow of Fig. 8. Hereinafter, with reference to these Fig. 8 to Fig. 11, the operations in accordance with the above-mentioned embodiment will be described.

First, operations in the in-home mode will be described with reference to Fig. 8. In this case, if a signal is not received at a step 1, a timer processing operation is performed at a step 2. That is, as shown in Fig. 9, determination is made that it is not in the night mode at a step 3 and that it is not in the overnight or out-of-home mode at a step 4. Then, the procedure returns to a main flow in Fig. 8 again. That is, determination is made that no input to any mode button is made at a step 5 and the operation at the step 1 is performed again.

It is determined or not any abnormality occurs at the step 1 and it is determined or not it is abnormal intrusion at a step 6. When it is not abnormal intrusion, processing for fire, emergency, patrol, gas or first aid is performed at a step 7. On the other hand, when it is abnormal intrusion, determination is made that it is in the in-home mode at a step 8. If the abnormal intrusion is due to an open signal sent from any of the intrusion senders 3, determination is made that the open signal is sent at a step 9 and the corresponding location display lamp 21 is turned on at a step 10. If the abnormal intrusion is due to a close signal sent from any of the intrusion senders 3, determination is made that the close signal is sent at a step 11 and the corresponding location display lamp 21 is turned off at a step 12. If the abnormal intrusion is due to a partial release signal sent from any of the intrusion senders, determination is made that the partial release signal is sent at a step 13 and the corresponding location display lamp 21 flashes at a step 14. As described above, when the window or the door is opened, the corresponding location display lamp 21 is turned on and

when the window or the door is closed, the corresponding location display lamp 21 is turned off. The location display lamp 21 corresponding to the intrusion sender, the abnormal detection function of which is released by the partial release switch 304 shown in Fig. 2, flashes. Following these operations, the timer processing operation is performed again at the step 2 and the above-mentioned operations are repeated.

Next, operations in the night mode will be described. Switching to the night mode is performed by determining that the night button 23 is pressed at the step 5 and the input from the night button 23 is accepted at a step 15. In the night mode, operations in the absence of receipt of the signal at the step 1 or abnormal intrusion at the step 6 are identical to the above-mentioned operations in the in-home mode.

On the other hand, when abnormal intrusion is determined at the step 6, following the operation at the step 8, determination is made that it is in the night mode at a step 16. At a step 17, a night intrusion processing operation is performed. That is, determination is made that the open signal is sent at a step 18 in Fig. 10 and the corresponding location display lamp 21 is turned on at a step 19. The intrusion lamp 17 is turned on at a step 20 and the speaker 28 and the buzzer box 11 generate an alarm at a step 21. In this embodiment, the volume of the alarm can be controlled in a plurality of stages and in this case, the alarm is sounded with moderate volume. Next, at a step 22, the night delay timer 331 is set. The procedure returns to the main flow again and the timer processing operation is performed. That is, determination is made that it is in the night mode at the step 3 and determination is made that the night delay timer 331 does not run out at a step 23. Then, again, in the main flow, the operations at the steps 5, 1, 6, 8 and 16 are performed and the night intrusion processing operation at the step 17 is performed.

In the night intrusion processing operation, determination is made that the close signal is sent at a step 24 and it is determined whether or not the intrusion lamp 17 is displayed at a step 25. If the intrusion lamp 17 is displayed, the procedure returns to the main flow without turning off the corresponding location display lamp 21 turned on by the open signal. However, if the intrusion lamp 17 is turned off, the corresponding location display lamp 21 is turned off at a step 26 and the procedure returns to the main flow. As described above, in the case where the intrusion lamp 17 is turned on, that is, the intrusion alarm attitude is taken, if once opening of the window or the door is detected, even when the window or the door is closed, the corresponding location display lamp 21 is kept lighted. Thus, the resident, for example, can surely recognize abnormal intrusion.

Next, the case where the night delay timer 331 runs out is assumed. In this case, in the timer processing operation shown in Fig. 9, following the operation at the step 3, it is detected that the night delay timer 331 runs out at a step 23 and the alarm is stopped at a step 27. Then, at a step 28, the switch box 12 is turned on to light the lamp 13. Subsequently, at a step 29, an intrusion signal is output to the dialer 8 and abnormality is informed to the security center 9.

On the other hand, the case where the function of the intrusion sender that detects opening/closing of the window or the door is released before the night delay timer 331 runs out, that is, the partial release switch 304 is operated is assumed. In this case, in the night processing operation shown in Fig. 10, following the operations at the steps 18 and 24, determination is made that the partial release signal is sent at a step 30. At a step 31, determination is made that the night delay timer 331 is during operation. When the intrusion lamp 17 is turned off accordingly at a step 32, the corresponding location display lamp

21 flashes. Furthermore, the alarm is stopped. If the controller 7 is switched to the in-home mode before the night delay timer 331 runs out, the function of the intrusion sender is released, the alarm is stopped and thus, report to the security center 9 is not performed.

Next, operations in the out-of-home or overnight mode will be described. Similarly to the switching to the night mode, switching to the out-of-home or overnight mode is performed at the steps 5 and 15 in the main flow in Fig. 8. In the out-of-home or overnight mode, in the absence of receipt of the signal at the step 1 in the main flow in Fig. 8 and in the absence of abnormal intrusion at the step 6, operations similar to those in the in-home mode or the night mode are performed.

On the other hand, when determination is made that abnormal intrusion at the step 6, through the operations at the step 8 and the step 16, an overnight intrusion processing operation is performed at a step 33. Operations in this case when leaving home and coming home, separately, will be described.

First, the operations when leaving home will be described. In this case, the resident first presses the out-of-home button 24 or the overnight button 25 of the controller 7 to switch the mode, opens the final gateway (for example, the entrance door) to go out, goes out and closes the final gateway. Through such operations, determination is made that an open signal is sent at a step 34 in the out-of-home mode and overnight intrusion processing flow shown in Fig.11 and determination is made that the open signal is caused by the entrance door at a step 35. Then, at a step 36, the corresponding location display lamp 21 is turned on. Subsequently, the gateway delay timer 335 is set at a step 37. The gateway delay timer 335 is set so as to run out for much longer time than the other timers, for example, 5 minutes. Next, after determination is made that the entrance guard flag 336 is not set at a step 38 and the timer processing

operation is performed. That is, through the operation at the step 3, determination is made that it is in the out-of-home or overnight mode at the step 4. Since the entrance delay timer 333 is not set in this stage, determination is made that the entrance delay timer 333 does not run out at a step 39. Similarly, since the entrance delay alarm timer 334 and the intrusion alarm timer 332 are not set, determination is made that each of the timers does not run out at a step 40 and a step 41. The entrance delay alarm timer 334 and the intrusion alarm timer 332 are not related to the operation when leaving home so closely. Next, at a step 42, determination is made that the gateway delay timer 335 does not run out and the operations in the main flow in Fig. 8 are performed again.

That is, through the operations at the steps 5, 1, 6, 8 and 16, the out-of-home and overnight mode processing operation at the step 11 is performed. At this time, when the entrance door is closed, in the out-of-home and overnight mode processing operation shown in Fig. 11, a close signal is detected at a step 42 and then determination is made that the close signal is caused by the entrance door at a step 43. At a step 44, the gateway display timer 335 is reset. Next, after determination is made that the entrance guard flag 336 is not set at a step 45, the entrance delay timer 333 is set at a step 46.

Following the above-mentioned operations, the timer processing operation in Fig. 9 is performed again. Here, the case where 30 seconds have passed since the entrance door is closed and the entrance delay timer 333 runs out is assumed. In this case, in the timer processing operation in Fig. 9, following the operations at the step 3 and the step 4, determination is made that the entrance delay timer 333 runs out at the step 39. Accordingly, the entrance guard flag 336 is set at a step 47. Thereby, the controller 7 takes intrusion guard attitude against the entrance door. If it is set so that the controller 7 may not take intrusion guard attitude against the entrance door until the entrance

delay timer 333 runs out since the entrance door is closed in this manner, even when the resident reopens the entrance door due to, for example, things left behind, the action is not treated as intrusion.

The case where the resident forgets to close the entrance door and goes out will be described. In this case, since the close signal is not sent from the entrance, the gateway delay timer 335 runs out after a lapse of 5 minutes without being reset at the step 44 in Fig. 11. The fact is determined at the step 42 in Fig. 9. Subsequently, after the entrance guard flag 336 is set at a step 48, an intrusion signal is output to the dialer 8 at a step 49. Accordingly, abnormality is informed to the security center 9. As described above, even if the resident forgets to close the entrance door and goes out, abnormality is informed to the security center 9 in 5 minutes, therefore, crime such as sneak thief can be prevented.

Next, the operations when coming home will be described. In this case, first, the open signal is detected at the step 34 of the out-of-home and overnight intrusion processing operation shown in Fig. 11 and determination is made that the open signal is caused by the entrance door at step 35. Like the above-mentioned case, following the operations at the steps 36 and 37, determination is made that the entrance guard flag 336 is set at the step 38. Accordingly, the alarm is issued at a step 50. It is preferred that the alarm is issued with the smallest volume of the volume in plural stages. Next, at a step 51, the entrance delay alarm timer 334 is set.

Here, when the controller 7 is switched to the in-home mode, the alarm attitude is released and the alarm is also stopped. Thereby, the resident can enter the house 1 without being treated as abnormal intrusion. On the other hand, when the controller 7 is not switched to the in-home mode before the entrance delay alarm timer 334 runs out, that is, the alarm attitude is not

released, determination is made that the entrance delay alarm timer 334 runs out at the step 40 in Fig. 9 and the corresponding location display lamp 21 is turned on at a step 52. Following this operation, the intrusion lamp 17 is turned on at a step 53 shown in Fig. 11 and an alarm is sounded at a step 54. It is preferred that the alarm at this time is sounded with large volume. Next, at a step 55, the intrusion alarm timer 332 is set. Then, it is determined whether or not it is in the overnight mode at a step 56. When it is in the overnight mode, the intrusion signal is output to the dialer 8 and abnormality is informed to the security center 9. On the other hand, when it is not in the overnight mode, that is, in the out-of home mode, the procedure returns to the main flow without performing report to the security center 9. This is due to that the overnight mode is a mode set when the resident goes far away for a long time and the out-of home mode is a mode set when the resident works near the house 1. In other words, in the out-of home mode, the resident can hear the alarm from the house 1 and promptly go back to the house 1. When 5 minutes has passed since the intrusion alarm timer 332 is set, determination is made that the intrusion alarm timer 332 runs out at the step 41 in Fig. 9. Accordingly, the alarm is stopped at a step 58. This is due to that the alarm ringing for a long time becomes nuisance to neighbors.

In the case where abnormal intrusion is detected in the out-of-home and overnight modes, if the entrance delay alarm timer 334 runs out even when the function of the intrusion sender of the entrance door is released, the alarm sounds with large volume or abnormality is informed to the security center 9. That is, even when a partial release signal is detected at a step 59 shown in Fig. 11, the corresponding location display lamp is turned on a step 60 and then the operations at the step 53 and succeeding steps are performed. This serves to prevent alarm attitude from being released by intruders other than the resident.

When opening of the places other than the entrance door is detected in the out-of-home and overnight modes at a step 61, the operations at the step 53 and succeeding steps are automatically performed. In other words, the open/close signal sent from the places other than the predetermined final gateway is automatically treated as abnormal intrusion.

As described above, according to the present invention, when the alarm device is switched to an unmanned guard mode, an alarm based on the open/close detection signal sent from the final gateway is stopped until a first predetermined time has passed since opening of the predetermined gateway is detected. Thus, even if the final gateway is opened for things left behind, there is no need to make complicated operations as conventional. Furthermore, no special supplemental appliances as conventional are required, thereby enabling a decrease in costs.

304は部分解除スイッチを示す。

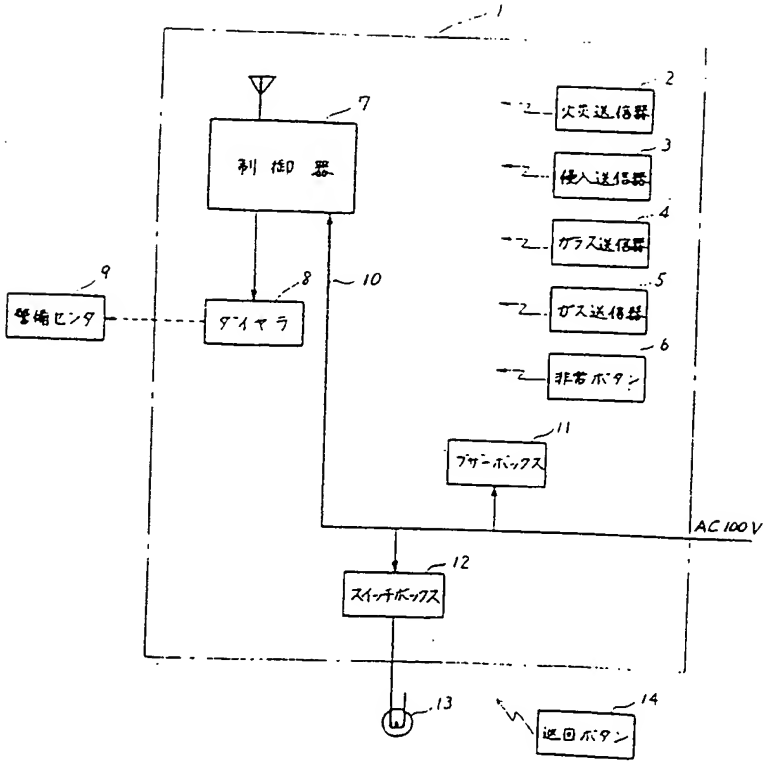
特許出願人　シャープ株式会社

代理人　弁理士　深見久郎

（ほか2名）

Fig 1

第1図



2 fire sender
3 intrusion sender
4 glass sender
5 gas sender
6 emergency button
7 controller
8 dialer
9 security center
11 buzzer box
12 switch box
14 patrol button

Fig. 2 第2図

301 control circuit
306 unit code
308 house code
309 voltage detection

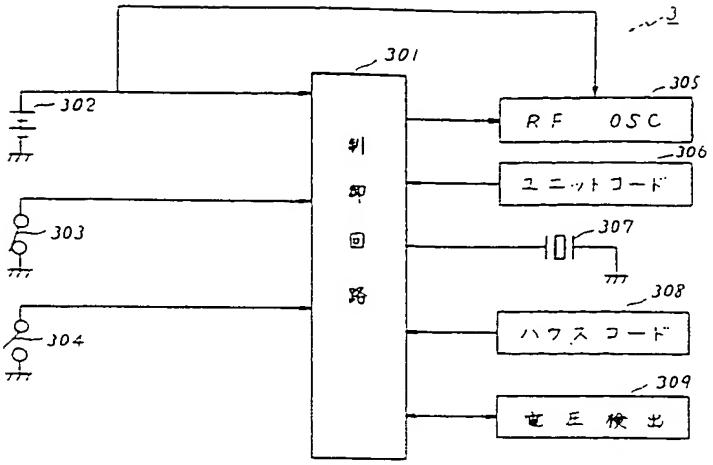


Fig. 5 第5図

331 night delay timer (30sec)
332 intrusion alarm timer (5min)
333 entrance delay timer (30sec)
334 entrance delay alarm timer (45sec)
335 gateway delay timer (5min)
336 entrance guard flag

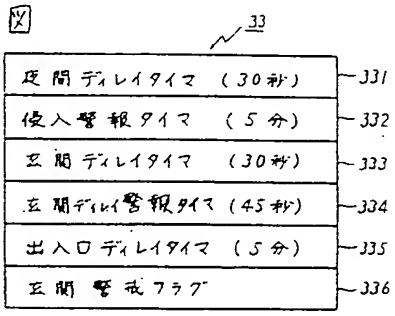
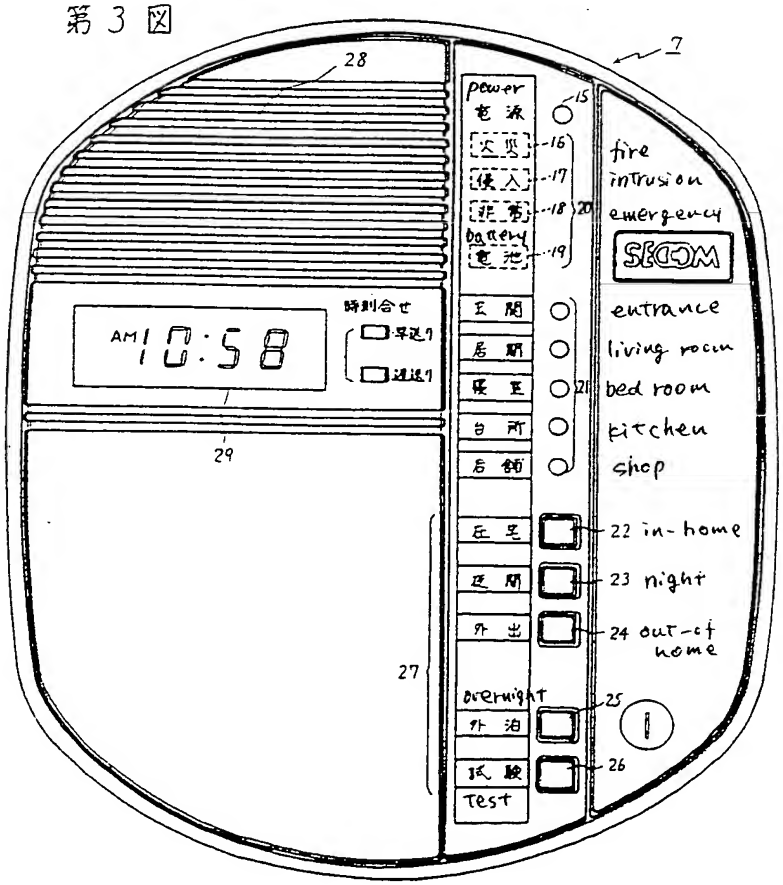


Fig. 3 第3図



第4図

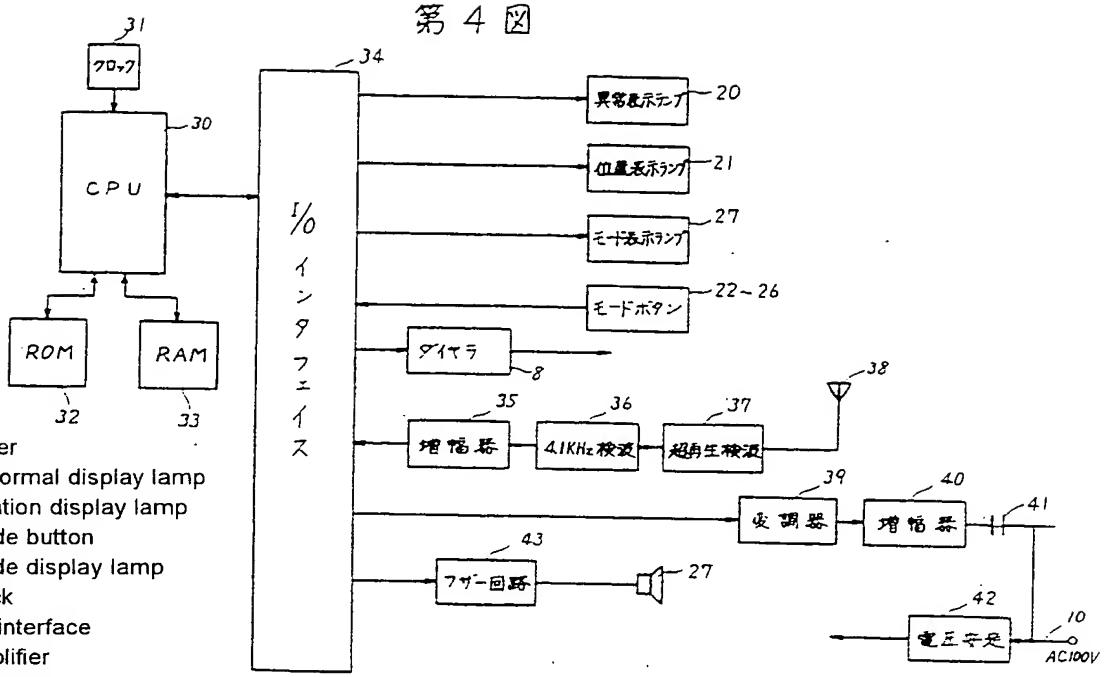


Fig. 4

8 dialer
20 abnormal display lamp
21 location display lamp
22-26 mode button
27 mode display lamp
31 clock
34 I/O interface
35 amplifier
36 4.1KHz wave detector
37 super regenerative wave detector
39 modulator
40 amplifier
42 voltage stavilization
43 buzzer circuit

第6図

Fig. 6

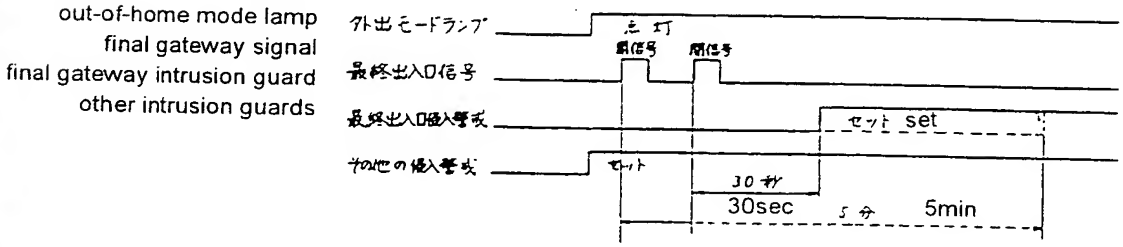


Fig. 7

第7図

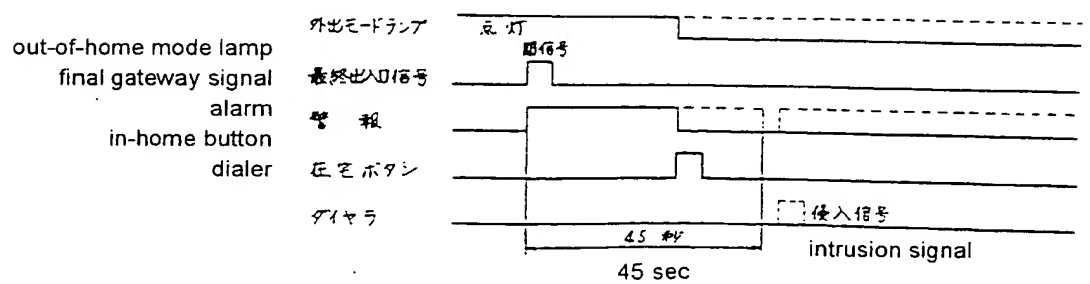
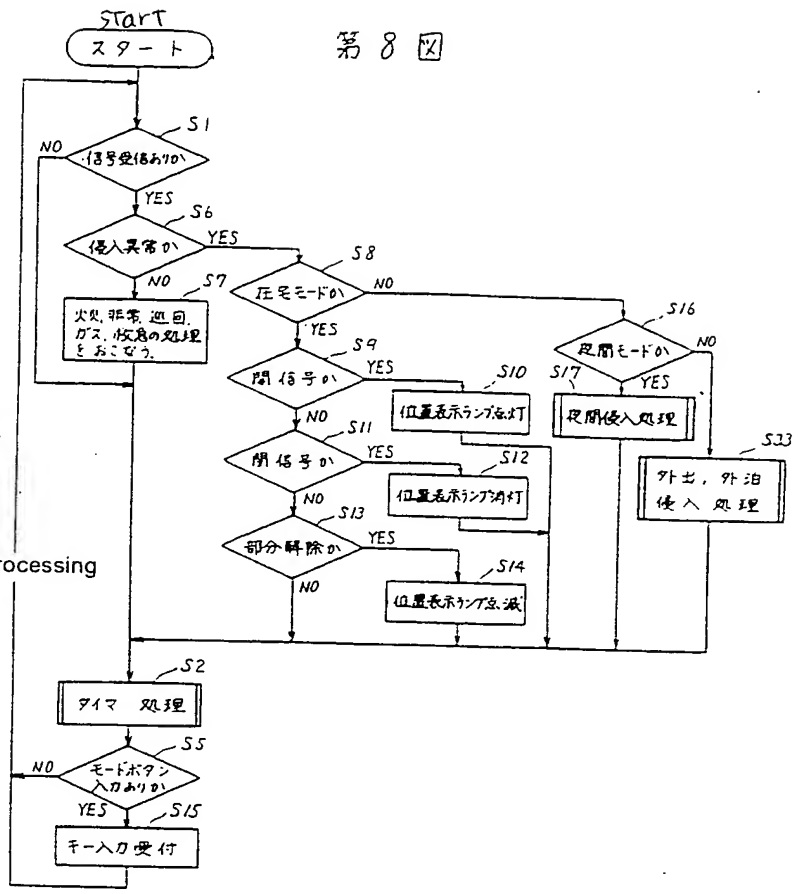


Fig. 8

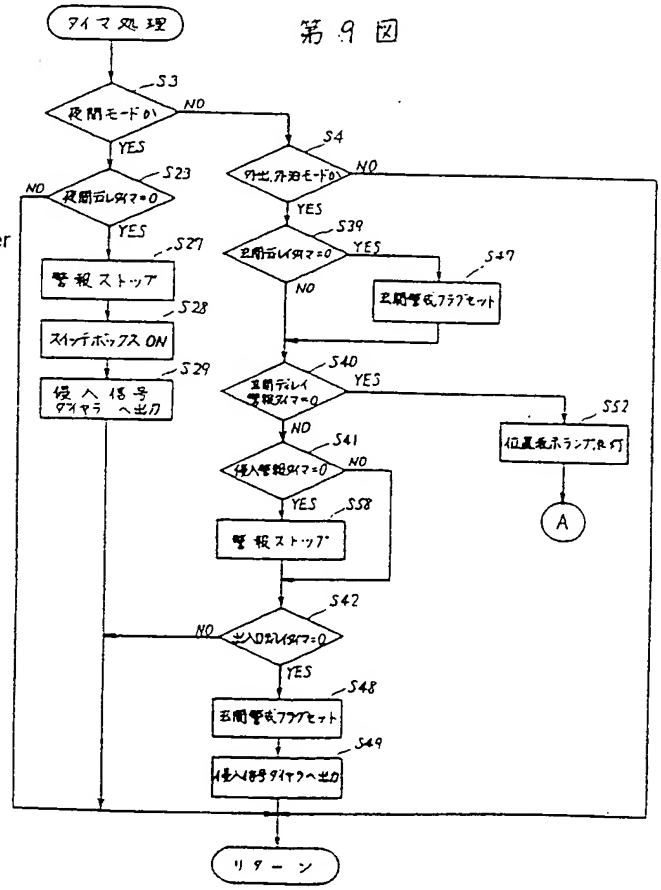
S1 signal received?
S6 abnormal intrusion?
S7 perform processing for fire, emergency, patrol, gas, first aid.
S8 in-home mode?
S9 open signal?
S11 close signal?
S13 partial release?
S10 Location display lamp is turned on
S12 Location display lamp is turned off
S14 Location display lamp flashes
S16 in-night-mode?
S17 Night intrusion processing
S33 out-of-home, overnight intrusion processing
S2 timer processing
S5 mode button inputted?
S15 key input reception



第8図

Fig. 9

timer processing
S3 in-night mode?
S23 night delay timer=0
S27 alarm is stopped
S28 switch box ON
S29, S49 intrusion signal is outputted to dialer
S4 overnight or out-of-home mode?
S39 entrance delay timer=0
S47, S48 entrance guard flag set
S40 entrance delay alarm timer=0
S41 intrusion alarm timer=0
S58 alarm stopping
S42 gateway delay timer=0
S52 location display lamp is turned on
return



第9図

Fig. 10

night intrusion processing
S18 open signal?
S24 close signal?
S30 partial release signal?
S31 night delay timer operation?
S32 intrusion lamp turned off
location display turned on
alarm stopping
S25 during intrusion display?
S26 location display lamp turned off
S19 location display lamp turned on
S20 intrusion lamp turned on
S21 alarm sounded
S22 night delay timer set
return

第10図

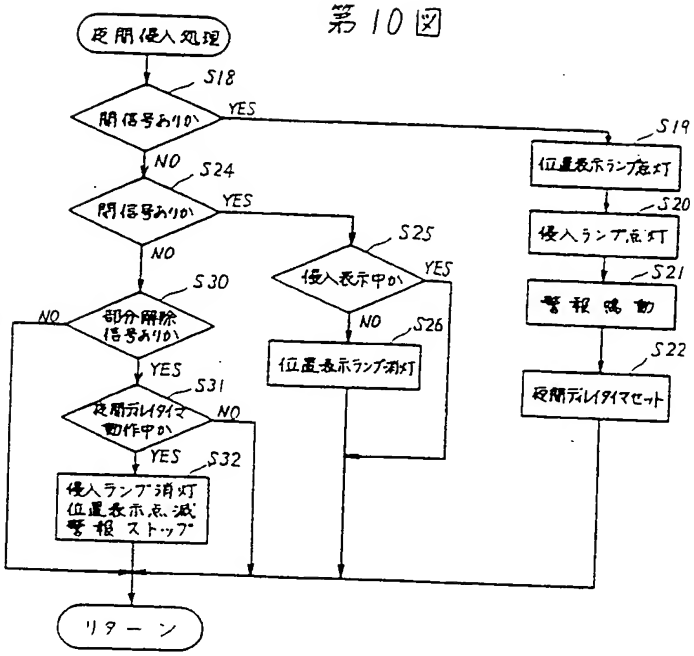


Fig. 11

out-of-home, overnight intrusion processing
S34 open signal?
S42 close signal?
S59 partial release signal?
S60 location display lamp turned on
S53 intrusion lamp turned on
S54 alarm sounded
S55 intrusion alarm timer set
S56 overnight mode?
S57 intrusion signal is outputted to dialer
S43 entrance?
S44 gateway delay timer reset
S45 entrance guard flag set?
S46 entrance delay timer set
S35 entrance?
S36 location display lamp turned on
S37 gateway delay timer set
S38 entrance guard flag set?
S50 alarm sounded
S51 entrance delay alarm timer set
S61 location display lamp turned on
return

第11図